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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/768,041	02/02/2004	A. Paul Zavitsanos	33543	6312

7590 11/04/2004

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EXAMINER

LEYBOURNE, JAMES J

ART UNIT PAPER NUMBER

2881

DATE MAILED: 11/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/768,041	Applicant(s) ZAVITSANOS ET AL.	
	Examiner James J. Leybourne	Art Unit 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-18 and 21-31 is/are allowed.
- 6) ☒ Claim(s) 19-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 19-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnea et al. (US 2004/00969820).

Barnea et al. provide methods and apparatus for analyzing data in a plurality of secondary mass spectra referred to as clusters and identifying groups of secondary mass spectra, which meet a predefined similarity criterion. The spectra in the plurality of secondary mass spectra may be obtained from different runs of material through the separation device or from runs of material through different separation devices.

In one embodiment, the apparatus uses a separation procedure prior to injection of material into the mass spectrometer, the time it takes for different components of a mixture to elute may be correlated between different elution runs in which different elution gradients were employed. This information may be

used to direct the fragmentation of primary mass spectrum components (pseudo molecular ions) that are likely to be a biomolecule of interest [0014] .

Regarding claims 19 and 20, Barnea et al. teach using a commercial software package, SEQUEST, spectra are analyzed against the NCBI Genpept protein library (reference library), a protein library containing the peptide sequence which was known to be the correct sequence of the peptide from which the spectra have been derived. Scores (match quality values) were assigned by the SEQUEST software to each of the spectra A, B, C and D on the basis of the likelihood that the respective spectra corresponded to a given peptide sequence [0136].

Regarding claim 22, one embodiment of the apparatus of Barnea et al. uses a high-pressure liquid chromatograph-mass spectrometer [0162].

Regarding claim 23, in example 1, electrospray (atmospheric pressure ionization) was used to analyze samples [0120].

Regarding claims 24, Barnea et al. are silent on the weighting given to the ratios of adduct, dimer and/or oligomer ions to each other or to the pseudo molecular ions. However, it would be obvious to one of ordinary skill in the art that, as admitted in the specification, adducts are not always present and, when present, vary greatly in abundance, their absence has no particular significance [010].

Regarding claim 25, Barnea et al. teach that; in the characterization of biomolecules, including peptides, oligonucleotides, glycopeptides, oligosaccharides, carbohydrates and other biopolymers or biooligomers; the

choice of component from the primary mass spectrum to be fragmented and the mass spectrum thereof obtained is usually based on a criterion such as relative abundance [0006].

Allowable Subject Matter

2. Claims 1-18 and 26-31 are allowed.

3. The following is an examiner's statement of reasons for allowance:

Regarding independent claim 1, the prior art fails to disclose or make obvious a method for accounting for adducts in mass spectrometer spectra for library searching comprising collecting multiple spectra at varying collision energies and creating a composite and reduced spectrum.

Regarding independent claim 9, the prior art fails to disclose or make obvious a method for identifying a pseudo molecular ion in a mass spectrometer spectrum comprising collecting multiple spectra at varying collision energies and using a dynamic algorithm for assigning a degree of importance to ions depending on their identity.

Regarding independent claim 26, the prior art fails to disclose or make obvious a computer readable medium including instructions to a computer to implement the method of claim 9.

Claims 2-8, 10-18 and 27-31 are allowed by virtue of their dependency on claims 1, 9 and 26 respectively .

The main feature that separates the apparatus and method apart from prior art is use of multiple spectra generated by fragmenting at different collision energies to identify ions in a mass spectrometer.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance"

Relevant Prior Art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2003/0213902 TO Takahashi discloses method and apparatus for analyzing a mass spectrum based on the mass-to-charge ratios of the detected adduct ions.

USPN 6639212 to Guevremont et al. teaches a method for searching a library of composite NMR spectra.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James J. Leybourne whose telephone

number is (571) 272-2478. The examiner can normally be reached on M-F 9:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

October 24, 2004

JJL